DATA EVALUATION RECORD

1. CHEMICAL: cyclopropanocarboxylic acid, FMC 54800 (EPA Reg. No. 279-EUP-RNR)

2. FORMULATION: 88.35% A.I.

3. CITATION:

   Hoberg, J.R. Acute Toxicity Of FMC 54800 Technical To Rainbow Trout (Salmo gairdneri). FMC Report No. A83-967. October 6, 1983. Unpublished report prepared by EG&G Bionomics for FMC Corporation. Acc. #251727.

4. REVIEW BY: Russel Farringer
   Wildlife Biologist
   EEB/HED

5. DATE REVIEWED: 1/16/84

6. TEST TYPE: Coldwater Fish LC_{50} = 120 hr

   Test Species: Rainbow trout (Salmo gairdneri)

7. REPORTED RESULTS: The 96 hr. LC_{50} was 0.15 ppb and the 120 hr. LC_{50} was approximately 0.10 ppb for rainbow trout when exposed to FMC 54800 technical. These values are based on nominal levels. No discernable effect concentration through 144 hours - <0.094 ppb (nominal value) the lowest level tested.

8. REVIEWER'S CONCLUSIONS: This study was scientifically sound. The 96 hr. and 120 hr. LC_{50} values (0.15 and 0.10 ppb indicate that this product is very highly toxic to cold water fish. This study will fulfill the requirement for a cold water fish LC_{50}.

   (Note: Per report - "...test results suggests cumulative toxicity, of FMC-54800 Technical to rainbow trout.")

Materials/Methods

Test Procedure

This study generally followed EPA guidelines. The study was conducted as a flow-through system due to solubility of the product. The test was ran for 120 hours, of which time the lowest dose level exceeded 35%. The D.O. and pH levels remained in the acceptable range. The test was conductaed at 12°C. Loading, fish size, holding period and other parameters were in their acceptable ranges.

Statistical Analysis

Stephans computer program

Reviewer's Evaluation

Test Procedure

FMC required the testing laboratory (EG&G) to extend the study. The apparent cutoff parameter was when the lowest dose achieved or exceeded 35% mortality. The desirable duration for a basic flow-through studies when the fish exceed 0.5 grams is 192 hours. Since the mean weight of the fish was 1.0 grams, this study could be considered as deficient in duration. However, the rationale for extending the study witht he larger organisms is to establish a mortality curve over time. From the following data, from the submission, this can be achieved to some degree with the 120 hour duration.

LC_{50} (ppb)				
24 hr.	48 hr.	72 hr.	96 hr.	120 hr.
6.2	0.34	0.20	0.15	0.10

The attached graphic presentation indicates that the toxic effect has approached a linear phase in the last 72 to 96 hours. That is, for each 24 hour period toxicity, based on LC_{50} data, increased by 50 parts per trillion.

Statistical Analysis

See attached computer sheets. The 96 hour and 120 hour nominal and calculated actual concentration LC_{50} indicates that the toxicity of FMC 54800 to rainbow trout is around 100 parts per trillion.

Conclusions

Category: Core

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EEB FMC 54800 RAINBOW ATROUT LC50

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
1.33	20	20	100	9.536743E-05
0.66	20	20	100	9.536743E-05
0.34	20	19	95	0.002002716
0.17	20	12	60	25.17223
0.083	20	6	30	5.765915

THE BINOMIAL TEST SHOWS THAT 625 AND 0.34 CAN BE
USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT
CONFIDENCE LIMITS, BECAUSE THE ACTUAL CONFIDENCE LEVEL
ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 0.1342811

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
2	0.1836776	0.1310773	0.08999476	0.1702884

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
6	0.1667625	1	0.8350948

SLOPE = 3.503979
95 PERCENT CONFIDENCE LIMITS = 2.073074 AND 4.934884

LC50 = 0.1266659
95 PERCENT CONFIDENCE LIMITS = 0.09200686 AND 0.1608668

LC10 = 0.05498126
95 PERCENT CONFIDENCE LIMITS = 0.02524319 AND 0.07909956

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EEB FMC 54800 RAINBOW TROUT LC50

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
1.5	20	20	100	9.536743E-05
0.75	20	20	100	9.536743E-05
0.38	20	19	95	0.002002716
0.19	20	12	60	25.17223
0.094	20	6	30	5.765915

THE BINOMIAL TEST SHOWS THAT 625 AND 0.38 CAN BE
USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT
CONFIDENCE LIMITS, BECAUSE THE ACTUAL CONFIDENCE LEVEL
ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 0.1507335

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
2	0.1836776	0.1473342	0.1015139	0.1909391

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
6	0.16932	1	0.8495569

SLOPE = 3.534691
95 PERCENT CONFIDENCE LIMITS = 2.080218 AND 4.989163

LC50 = 0.1425805
95 PERCENT CONFIDENCE LIMITS = 0.103867 AND 0.1807663

LC10 = 0.06233961
95 PERCENT CONFIDENCE LIMITS = 0.02864887 AND 0.08941764

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NOTE TO REVIEWER: THIS DATA SET DOES NOT MEET
THE CRITERIA ESTABLISHED BY THE COMMITTEE ON METHODS
FOR TOXICITY TESTS WITH AQUATIC ORGANISMS BECAUSE
NO PERCENT DEAD IS LESS THAN 35 PERCENT.

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EEB FMC 54800 RAINBOW TROUT LC50

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
1.5	20	20	100	9.536743E-05
0.75	20	20	100	9.536743E-05
0.38	20	20	100	9.536743E-05
0.19	20	17	85	0.1288414
0.094	20	9	45	41.19015

THE BINOMIAL TEST SHOWS THAT 625 AND 0.19 CAN BE
USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT
CONFIDENCE LIMITS, BECAUSE THE ACTUAL CONFIDENCE LEVEL
ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 0.1019566

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
1	0.5479189	0.1019566	0.04077324	0.1323049

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
7	0.2871527	1	0.965656

SLOPE = 4.260062
95 PERCENT CONFIDENCE LIMITS = 1.977239 AND 6.542886

LC50 = 0.102504
95 PERCENT CONFIDENCE LIMITS = 0.06690267 AND 0.128754

LC10 = 0.05159683
95 PERCENT CONFIDENCE LIMITS = 0.01671213 AND 0.07512049

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NOTE TO REVIEWER: THIS DATA SET DOES NOT MEET
THE CRITERIA ESTABLISHED BY THE COMMITTEE ON METHODS
FOR TOXICITY TESTS WITH AQUATIC ORGANISMS BECAUSE
NO PERCENT DEAD IS LESS THAN 35 PERCENT.

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EEB FMC 54800 RAINBOW ATROUT LC50

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
1.33	20	20	100	9.536743E-05
0.66	20	20	100	9.536743E-05
0.34	20	20	100	9.536743E-05
0.17	20	17	85.	0.1288414
0.083	20	9	45	41.19015

THE BINOMIAL TEST SHOWS THAT 625 AND 0.17 CAN BE
USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT
CONFIDENCE LIMITS, BECAUSE THE ACTUAL CONFIDENCE LEVEL
ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 0.09016313

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
1	0.5479189	0.09016313	0.03544104	0.1175755

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
7	0.283088	1	0.9628267

SLOPE = 4.196694
95 PERCENT CONFIDENCE LIMITS = 1.9638 AND 6.429587

LC50 = 0.0906742
95 PERCENT CONFIDENCE LIMITS = 0.05894114 AND 0.1142813

LC10 = 0.0451715
95 PERCENT CONFIDENCE LIMITS = 0.01458715 AND 0.06609879

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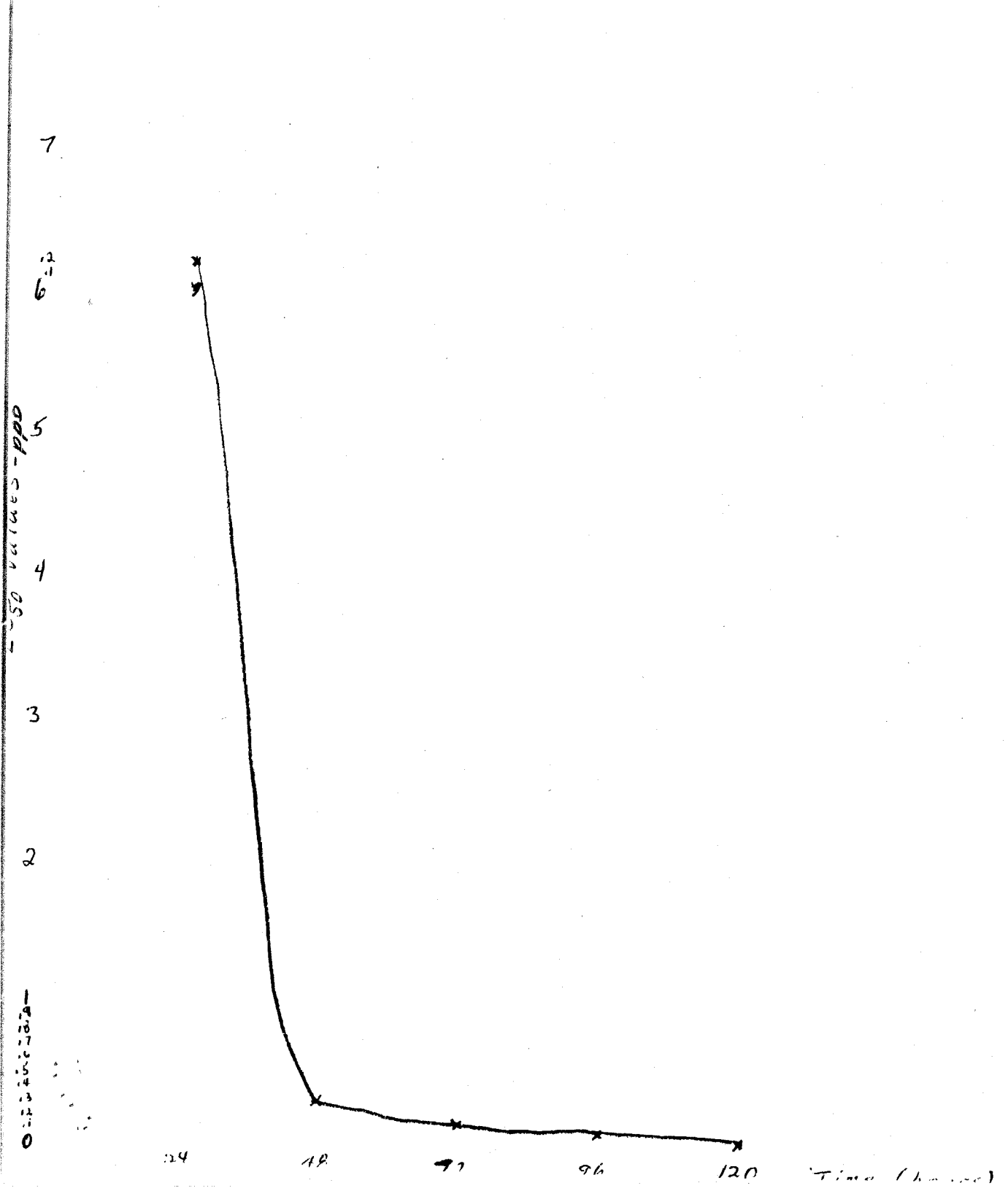
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